

IOWA STATE UNIVERSITY

Extension and Outreach

CROP NOTES for April 20, 2020

Iowa State University Extension Information for Northeast Iowa

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Past issues of Crop Notes are posted at:

<http://www.extension.iastate.edu/winneshiek/page/crop-notes-brian-lang>

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WEATHER

Soil Temperatures

Currently the average 4-soil temperatures for northeast Iowa are in the mid- to upper 40’s. Monday is nice, but Tuesday will be cool. Wednesday’s daytime high air temperature should be near 70F and Thursday in the 60’s which will bring 4-inch soil temperatures into the 50’s. But the next few days after that are cooler with high/low daily air temperatures of mid- to high 50’s/high 30’s. Not exactly a weather pattern conducive to 50F and increasing soil temperatures. Once we get into an air temperature pattern of 60’s high 40’s low, the 4-inch average soil temperature will remain 50F or better. The 10-day weather forecast says that pattern starts next Tuesday.

Imbibitional Chilling

Some ask me about planting now. Once again, the recommendation is to plant when the soil is fit and average 4-inch soil temperatures are 50F and increasing. Earlier than this carries a concern with something called imbibitional chilling. To best explain this please read the 1-page article from Purdue University at:

<https://www.agry.purdue.edu/ext/corn/news/timeless/ImbibitionalChilling.html>

Weather Outlook

For next week to next month, probabilities favor fairly normal temperatures and rainfall for northeast Iowa.

What Did Last Week's Nightly Lows in the Teen's Do To Crops?

Last week Tuesday, Wednesday, Thursday had night lows of 18F, 16F , 18F in far northeast Iowa. What did that do to established alfalfa, new seedings of alfalfa, spring planted oats, and fall planted rye?

1. Established alfalfa and alfalfa-grass: Alfalfa was not phased at all. Just a bit of frosted leaf tips. Some orchardgrass had leaf tips frosted back about 1-inch or so, but that was it. I did not find any perennial ryegrass to evaluate. It would have a higher risk to frost injury, but I'm not too worried about it.
2. New alfalfa seedings: Emerged new seedings would be our greatest concern. However, it's easy for newly emerged seedlings to tolerate mid-20's air temperatures, and probably low 20's air temperatures. Regarding air temperatures in the teens, newly emerged plants are very close to the soil, and the warmer soil temperatures offer some protection against the colder air temperatures. Last Friday I drove around looking for stands to evaluate but I could not find hardly anything emerged yet, so those stands should be fine. There was one stand north of Lime Springs planted April 1 that only started to show some emergence, ~1 plant per square foot so far. Emerged cotyledons had some discoloration (yellow) from the outward tip to about half-way back up the cotyledon. I'll revisit the field in a week. For new seedings that were up, wait a week after the frost event to evaluate. As long as at least one set of leaves escapes damage, the plant should recover. Count living plants per square foot. If more than 20 plants per square foot remain, the stand will survive in good shape. If there are less than 15 plants per square foot, consider interseeding more alfalfa into the stand.
3. Oats: No problem. Not even much of any frost on leaf tips.
4. Winter rye: No problem. Still not at jointing stage so the main growing point still below ground. Not even much of any frost on leaf tips.

CORN

Recommended Plant Population

On average, maximum grain yields in Iowa occur between 34,500 and 37,000 plants per acre, although there is significant variation across locations and years. Typically, the optimum seeding rate will be 3,000-5,000 seeds per acre lower than the seeding rate at which maximum yield is attained. So on average, the best net returns should occur with plant populations at harvest between about 30,000 and 34,000 plants per acre. Not every seed that is planted develops into a plant. As a rule of thumb, there is 5-15% mortality of planted seeds per acre due to seed germination percentage, environmental conditions and pest pressures. For organic corn production where no seed treatments are used, the University of Wisconsin recommends increasing seeding rates by 18% (e.g. desired harvest stand of 30,000, plant 18% higher = 35,400).

Corn GRAIN production on rate, date, depth and row spacing:

- Rate: Targeting 30,000 to 34,000 plants per acre harvested stand should be adjusted up by 5-15% for % germ and other field attrition factors for planting rate seeds/acre, so 30,000 to 34,000 increased by 10% = 33,000 to 37,400 planting rate.

- Date: Based some on calendar, but more so on soil temperature (>50°F and increasing) and field conditions fit to plant... calendar-wise, April 12 through May 2 is northeast Iowa's window for maximum yield potential, but fields need to be fit for planting and soil temperatures need to >50°F and increasing.
- Depth: About 2 inches. No less than 1¾ inches or more than 3 inches.
- Row space: 30-inch rows still work well, but there is nothing wrong with narrower rows. Yield increases with narrow rows are inconsistent, but there is no yield penalty with narrow rows.

Corn SILAGE production on rate, date, depth and row spacing:

- Date & depth are the same as for corn grain production.
- Rate: Increase by 10% over that recommended for grain will often maximize silage yields, but not necessarily quality and milk production per acre.
- Row space: Narrow rows (*i.e.* 15-20-inch or twin rows) generally provide a yield advantage over 30-inch rows for corn silage production, but not necessarily an advantage for quality and milk production per acre.

Planter Maintenance Tips

This is an ICM News article posted April 9 2019 at:

<https://crops.extension.iastate.edu/cropnews/2019/04/planter-maintenance-tips-2019>

Nitrogen Fertilizer Recommendation

Consider using the Corn N Rate Calculator to provide a practical baseline economic N rate, then begin your discussion of then fine-tuning the N rates for different fields, N placement, fall or spring applied, split application, with or without manure applied (fall or spring, surface or incorporated, type of livestock), etc. Go to: <https://crops.extension.iastate.edu/blog/john-sawyer/corn-nitrogen-rate-calculator-website-2018-update>

SOYBEANS

Soybean Planting Rate, Date, Depth, Row Spacing, etc.

Rate: The general recommendation is to seed between 125,000 and 140,000 seeds per acre, regardless of row spacing and planting date, but usually including a fungicide seed treatment especially with cooler soil conditions, with the goal to harvest 100,000+ plants per acre. Check the % germination on the seed tags and increase the seeding rate accordingly for lower % germination. University of Wisconsin recommends to target a final stand of 100,000+ plants in productive fields, 135,000+ plants in low productive fields or low productive areas within fields, and plant less than 140,000 seeds in white mold areas.

Date: Late April through mid-May is best as long as the soil is fit.

Depth: 1 to 1.5 inches, and never deeper than 2 inches. Adequate soil moisture is the most important factor controlling soybean germination. Soybean seed must imbibe 50% of its weight

in moisture for germination to begin. Germination will be significantly reduced if moisture levels in the seed fall below 20% after the seed swells and the seed coat splits. This is why agronomists recommend placing soybean seed into at least 0.5 inches of moist soil at planting. Under dry soil conditions, this may not be possible without planting the seed too deep.

Row space: In general, ISU research shows an average yield increase of 4.5 bu/ac for narrow rows (15 or 20") compared to 30" rows.

Soybean Inoculant: When, Where, and Why

In general, we consider adding rhizobia inoculum to soybeans if:

- 1) The field has no previous history of soybeans, or were not grown within the last 3-5 years.
- 2) Environmental factors occurred in the field that could negatively impact the survival of bacteria such as flood or drought. Even just a week of flooded conditions could be a problem.
- 3) The soil type is sandy; not a loam or silt loam.
- 4) The soil pH is too low for good bacterial development. Add inoculum for this season, but correct with a lime application for the future.

WEEDS

Check FieldWatch® Before You Spray

FieldWatch® provides a voluntary mapping tool to show pesticide applicators the locations of registered sensitive crops and beehives so they can make informed decisions regarding potential pesticide applications. Two mobile apps are available to improve access. For more information, go to: <https://crops.extension.iastate.edu/cropnews/2018/04/fieldwatch%C2%AE-%E2%80%93-you-spray>

Planting Interval of Corn and Soybeans after 2,4-D or Dicamba Burndown Application

From a 2019 University of Nebraska article, here's general guidelines on planting intervals for corn and soybeans after applying 2,4-D/dicamba:

- We recommend NOT applying dicamba in pre-plant burndown applications unless you are planting Roundup Ready 2 Xtend soybean. FeXapan, Engenia, Tavium or XtendiMax are labeled dicamba products that can be applied in burndown before planting Roundup Ready 2 Xtend Soybean.
- If 2,4-D (4 lb/gal product) is applied at 16 fl oz/acre in a burndown program, the planting interval should be 7 days for corn and soybean.
- If 2,4-D (4 lb/gal product) is applied at >16 fl oz/acre in a burndown program, the planting interval should be 14 days for corn and 30 days for soybean.
- If dicamba is applied at 4 oz/acre or less in a burndown program, the planting interval for corn should be 5 days. If dicamba is applied at 8 oz/acre, the planting interval for corn should be 7 days.

- DiFlexx and DiFlexx DUO are dicamba products with CSI safener; therefore, corn can be planted any time after application of these product. Care should be taken, however, so that corn seed does not contact the herbicide.

The full article is available at: <https://cropwatch.unl.edu/2019/planting-interval-corn-soybean-sorghum-after-24-d-or-dicamba-burndown>

Performance of Preemergence Herbicides on Waterhemp Control in Soybean

The article was posted April 17 on the ICM News at:

<https://crops.extension.iastate.edu/cropnews> The article uses the chemical names of herbicides. To relate this to trade names that you are more familiar with, either download the “Take Action Herbicide Classification Chart”: <https://iwilltakeaction.com/uploads/files/2020-take-action-herbicide-classification-chart.pdf> or download the “2020 Herbicide Guide for Iowa Corn and Soybean Production”: <https://store.extension.iastate.edu/product/2020-Herbicide-Guide-for-Iowa-Corn-and-Soybean-Production> and go to pages 18-20 to match chemical names to trade names.

TERMINATING COVER CROPS

Rye Cover Crop Termination & Planting Corn

Favorable weather conditions for control of rye with glyphosate is to have day/night temps of 60’s/40’s. The current 10-day forecast shows Hwy 9, Hwy 18, Hwy 3 regions just marginally at a 60/40 temps window starting mid-next week. I little better along Hwy 20. A common recommendation is to herbicide kill the rye, then wait 10-14 days before planting corn. This appears to be more important with delayed termination of taller rye. For a few more details on this subject, see the March 2019 article on cover crop termination:

<https://crops.extension.iastate.edu/cropnews/2019/03/spring-cover-crop-termination>

Terminating Annual Ryegrass (from Penn State University)

Annual ryegrass control can be more challenging than winter cereal cover crops. Glyphosate has better activity on annual ryegrass than paraquat (Gramoxone), but several best management practices should be followed, including: 1) timing applications to sunny, warm days (> 55°F); 2) targeting actively growing plants prior to rapid growth stages (< 8-inch); and 3) use of higher glyphosate rates (1.25 to 1.5 lb ae/ac) with appropriate adjuvants.

Table 1: Herbicide Recommendations for Termination of Various Cover Crop Species Prior to Corn (from Penn State University).

Control rating: 10 = 95–100%, 9 = 85–95%, 8 = 75–85%, 7 = 65–75%, 6 = 55–65%, N = less than 55%, + = upper end of rating scale.

Herbicide	Rate (lb ai or ac/acre) ¹	Alfalfa ²	Bluegrass/Timothy ²	Bromegrass/ Orchardgrass/ Fescue ²	Clover, Crimson	Clover, Red ²	Clover, White ²	Mustards/Radish/ Rapeseed	Ryegrass, Annual	Rye, Cereal	Wheat, Winter	Vetch, Hairy
2,4-D ester	0.5 1	7+ 8	N N	N N	7 8	8 9	6 7	8 9	N N	N N	N N	9 10
2,4-D ester + dicamba	0.5 + 0.5	9+	N	N	8+	9	9	8	N	N	N	10
Atrazine	1 2	N 6	6 7	6 7	6 7	6 7	6 7	6 7	6 7	6 7	6 7	7 8
Clopyralid	0.25	8+	N	N	8	9	9	N	N	N	N	9
Dicamba	0.5	9	N	N	8	9	9	7	N	N	N	9
Glyphosate	0.75 1.5	6 7	9 9+	8 8+	8 8+	7 7+	6 7	7+ 8+	8 9	9 9	9 9	7 8
Glyphosate + 2,4-D ester or dicamba	0.75 + 0.5 0.75 + 0.5	8+ 9	9 9	8 8	9 9	8 9	8 9	9 8	8 8	9 9	9 9	10 10
Mesotrione + atrazine	0.168 + 1	7	6	6	8	7+	7+	8	6	6	6	7
Paraquat	0.5 0.75	N N	7 7+	6 7	8 9	7 8	7 7	8 8+	6 6	7 8	8 8+	7 8
Paraquat + atrazine or metribuzin	0.5 + 1 or 0.25	7	9	8	10	8+	7	9	7	8+	8+	9
Paraquat + 2,4-D or dicamba	0.75 + 0.5	7+	7	6	9	8+	8	9	6	8	8+	10

¹ 0.75 lb glyphosate = 32 fl oz of a 41% glyphosate; 0.5 lb paraquat = 2 pt Gramoxone SL.

² Application in the fall can improve control with some herbicides.

Table 2: Herbicide Recommendations for Termination of Various Cover Crop Species Prior to Soybean (from Penn State University).

Control rating: 10 = 95–100%, 9 = 85–95%, 8 = 75–85%, 7 = 65–75%, 6 = 55–65%, N = less than 55%, + = upper end of rating scale.

Herbicide	Rate (lb ai/acre) ¹	Alfalfa ²	Bluegrass/Timothy ²	Bromegrass/ Orchardgrass/ Fescue ²	Clover, Crimson	Clover, Red ²	Clover, White	Mustards/Radish/ Rapeseed	Rye, Cereal	Ryegrass, Annual	Wheat, Winter	Vetch, Hairy
2,4-D ester	0.5 1	7+ 8	N N	N N	7 8	8 9	6 7	7+ 8+	N N	N N	N N	9 10
Dicamba	0.5	9	N	N	8	9	9	N	N	N	N	9
Glyphosate	0.75 1.5	6 7	9 9+	8 8+	8 8+	7 7+	6 7	6 7+	9 9	8 9	9 9	7 8
Glyphosate + 2,4-D ester	0.75 + 0.5	8+	9	8	9	8	8	8	9	8	9	10
Glyphosate + dicamba	0.75 + 0.5	9	9	8	9	9	9	7	9	8	9	10
Paraquat	0.5 0.75	N N	7 7+	6 7	8 9	7 8	7 7	7 8	7 8	6 6	8 8+	7 8
Paraquat + 2,4-D	0.75 + 0.5	7+	7	6	9	8+	8	8	8	6	8+	10
Paraquat + dicamba	0.75 + 0.5	9	7	6	10	8+	8	8+	8	6	8+	10
Paraquat + metribuzin	0.5 + 0.25	7	9	8	10	8+	7	8+	8+	7	8+	9

¹ 0.75 lb glyphosate = 32 fl oz of a 41% glyphosate; 0.5 lb paraquat = 2 pt Gramoxone SL.

² Application in the fall can improve control with some herbicides.

INSECTS

Current Insect Pest Activity

Current activity is minimal.

True armyworm and Black cutworm: Moth traps are just starting to catch a few migrating Black cutworm moths. Nothing of concern.

Seedcorn maggot: is just starting to reach degree day accumulations in southern Iowa to suggest adult flight, but too cold yet in northern Iowa

<https://crops.extension.iastate.edu/cropnews/2020/04/seedcorn-maggots-flying-iowa>

Common stalk borer: If you didn't burn grassy areas along the edges of corn fields, the next control option is to spray an insecticide along grassy field borders at egg hatch (575-750 DD, base 41F starting Jan. 1). Or wait until larva migrate from grassy field borders into the first few rows of corn at (1300-1700 DD). Current DD accumulation is only about 220 at this time. Future Crop Notes will zero in on this timeline.

Handy Bt Trait Table for 2020

The very popular “ Handy Bt Trait Table” updated for 2020 is available at: https://agrilife.org/lubbock/files/2020/02/BtTraitTable_FEB_2020.pdf

Do You Need an Insecticide Seed Treatment for Soybeans?

There are three key reasons to consider the use of an insecticide seed treatment for soybeans.

- 1) Threat of certain soil insects, *i.e.* Seed corn maggot, White grubs and/or Wireworms.
- 2) Threat of Bean Leaf Beetle activity during crop emergence and early development.
- 3) Threat of Soybean Aphid activity in June-July.

Regarding (1), Seed corn maggots: Seedcorn maggots are occasional pests of both corn and soybean seeds at germination. Yield reduction occurs because of stand loss, and damage is more likely in cool, wet springs when the seeds are slow to germinate but the insects are still actively feeding. The greatest potential for Seedcorn maggot damage exists when sod, weedy fields or fresh animal manure (spring or winter applied) are incorporated into the soil just before planting. Decaying material attracts the adult flies where the females lay their eggs. If manure has been spread on the field in spring or winter, or a cover crop or sod or considerable weed biomass was disked or plowed this spring, consider using an insecticide seed treatment for soybeans and corn. If using a rootworm insecticide in corn, the seed treatment is not usually necessary for Seedcorn maggot control, although an ISU study at Ames in 2000 showed some inconsistencies with Force 3G and Capture 2EC on control of Seedcorn maggot. See photo of pest and additional information from an April 16 2020 in the ICM News

at: <https://crops.extension.iastate.edu/cropnews/2020/04/seedcorn-maggots-flying-iowa>

Regarding (1), Wireworm: If you have had recent problems in a field with Wireworms, consider using an insecticide seed treatment. Problems are more likely to occur in corn or soybeans following sod or CRP, but Wireworm problems have been found in some corn-soybean rotations. Since Wireworms can exist up to 7 years in their larval stage, if Wireworms were a problem in a field 1, 3 or 5 years ago, there is a good chance they will still be there this year. Insecticide seed treatments offer effective control for moderate populations. In corn, if high populations are expected, a soil insecticide offers greater assurance of control. See photos of this pest at: <http://www.ent.iastate.edu/imagegal/coleoptera/click/>

Regarding (1), White grubs (more specifically True white grubs): As with most soil insects, it is difficult to predict when and where True white grubs will be found. Problems can be expected in corn and soybean fields following grass sod (pasture, CRP, etc.). But stand loss has also occurred in both continuous and rotated corn. In Iowa, the problem is usually but not always found adjacent to areas bordered by cottonwood or willow trees. Sometimes True white grubs are found far from trees and the reason for their occurrence in a field remains a mystery. Since True white grubs can take up to 3 years to complete their life cycle, if they were a problem last year, they still could be a problem this year. The Nicotinoid seed treatments are very effective on grubs. If using a rootworm insecticide, *i.e.* in continuous corn, the insecticide seed treatment is not necessary for True white grub control. Additional information on control and ID of True white grubs is at: <https://crops.extension.iastate.edu/cropnews/2015/06/true-white-grub-identification-and-management>

Regarding (2), Bean Leaf Beetle: If Bean leaf beetle populations are high in spring they can be a problem feeding on emerging soybeans, and the Nicotinoid seed treatments are very effective on this pest (*i.e.* research results on populations in 2002-2004 <https://crops.extension.iastate.edu/seed-treatments-soybean-managing-bean-leaf-beetles>). However, we have not seen significant Bean leaf beetle populations in northeast Iowa for many years now... not since the early 2000's. Currently found populations in northeast Iowa do not appear to be a viable reason to use an insecticide seed treatment for soybeans.

Regarding (3), Soybean Aphid: When Soybean aphid first invaded Iowa, economic threshold levels were often reached in June and July. The use of insecticide seed treatments were able to reduce and/or delay these threshold levels from occurring until August, and based on crop scouting having a timely foliar insecticide applied just once a season in August. As Soybean aphid and the Iowa environment (predation by insects and diseases) adapted to each other, we now see Soybean aphid populations not reach economic thresholds until August. This is far enough removed from planting date such that the insecticide seed treatment has little influence on the pest, so the insecticide seed has little value in control of this pest. But regardless of using an insecticide seed treatment or not, we still crop scout mid-July through mid-August to see if a timely foliar insecticide application should be made.

Some view insecticide seed treatments for soybeans as an insurance policy. Others can consider that if their current farming conditions are not threatened by (1), (2) or (3) above, they could save a few dollars and skip the insecticide treatment for soybeans.

DISEASES

Efficacy of Soybean Seed Treatments

To find out which active ingredients control which diseases and which products contain those active ingredients. Go to:

<https://crop-protection-network.s3.amazonaws.com/publications/fungicide-efficacy-for-control-of-soybean-seedling-diseases-filename-2020-03-18-150238.pdf>

UPCOMING WEBINARS

April 14, 16, 21 & 23, Breeding Management Series

All webinars run from Noon to 1:00 PM. The following dates and topics will be presented:

- April 14, Nutrition's Role in Reproduction
- April 16, Using Reproductive Technology to Move Up the Breeding Season
- April 21, Focusing on Bull Power
- April 23, Heterosis: Capturing the Benefit

Find more information about the FREE webinars and registration at:

<http://www.iowabeefcenter.org/BreedingManagementSeries.html>

April 22, Stored Grain Handling & Management to Address Issues for this Spring & Summer

Webinar starts at 9:00 AM. Six university specialists on grain management address questions and solutions faced by managers of on-farm and commercial grain storage. A panel style format will be moderated by three experts and topics will focus on:

- grain conditioning - drying grain stored wet through the winter, condensation management, etc.
- stored grain management - temperature management, monitoring methods and tools, etc.
- handling - issues with jammed discharge wells, preventing blockage during unloading, etc.
- safety - safe practices during unloading, how to assess situations and mitigate dangers, etc.

To register for the webinar, go to this link:

<https://attendee.gotowebinar.com/register/5916473574663392781>

More information about this program is available at:

<https://extension.entm.purdue.edu/newsletters/pestandcrop/article/stored-grain-handling-and-management-webinar-addressing-pressing-issues-this-spring-summer/>

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